



U.S. Department
of Transportation
**Federal Aviation
Administration**

Advisory Circular

**Subject: ARCHITECTURAL, ENGINEERING, AND
PLANNING CONSULTANT SERVICES
FOR AIRPORT GRANT PROJECTS**

**Date: 2/16/94
Initiated by: AAS-200**

**AC No: 150/5100-14C
Change:**

1. PURPOSE. This advisory circular (AC) provides guidance for airport sponsors in the selection and employment of architectural, engineering, and planning consultants under Federal Aviation Administration (FAA) airport grant programs. It also discusses services that normally would be included in an airport grant project, types of contracts for these services, contract format and provisions, and guidelines for determining the reasonableness of consultant fees.

2. CANCELLATION. AC 150/5100-14B, Architectural, Engineering, and Planning Consultant Services for Airport Grant Projects, dated 11/21/88, is canceled.

3. APPLICATION. The guidelines contained herein are recommended by the Federal Aviation Administration for use in selecting consultants for airport grant projects.

4. RELATED READING MATERIAL. Additional information may be found in the following publications:

a. Guide to Selecting Airport Consultants, Airport Consultants Council, 421 King Street, Suite 220, Alexandria, Virginia 22314.

b. Consulting Engineering, A Guide for the Engagement of Engineering Services, American Society of Civil Engineers (ASCE), available from Headquarters of ASCE, United Engineering Center, 345 47th Street, New York, New York 10017.

c. Professional Selection of Professional Engineers, NSPE Publication No. 1974, National Society of Professional Engineers (NSPE), available from NSPE, 1420 King Street, Alexandria, Virginia 22314.

d. A Guide to the Procurement of Architect and Engineering Services, American Consulting Engineers Council, 1015 15th Street, NW, Suite 802, Washington, DC 20005.

5. BACKGROUND.

a. 49 CFR 18, Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments, provides the policy and procedures to be used for procurements made under Federal grant programs. This AC provides a recommended procedure for complying with the provisions of Section 18.36 in the procurement of architectural/engineering services under the FAA's airport grant program.

b. Section 511, paragraph (a)(16) of the Airport and Airway Improvement Act (AAIA) of 1982, as amended, defines the types of service contracts that must be awarded in the same manner as a contract for architect and engineering services is negotiated under Title IX of the Federal Property Administrative Services Act of 1949.

6. DEFINITIONS. The following definitions apply to terms used in this advisory circular:

a. **Architect/Engineer (A/E) Services.** The term "architectural and engineering services" means:

(1) Professional services of an architectural or engineering nature, as defined by state law, if applicable, which are required to be performed or approved by a person licensed, registered, or certified to provide such services as described in this paragraph;

(2) Professional services of an architectural or engineering nature performed by contract that are associated with research, planning, development, design, construction, alteration, or repair of real property; and

(3) Such other professional services of an architectural or engineering nature, or incidental services, which members of the architectural and engineering professions (and individuals in their employ) may logically or justifiably perform, including studies, investigations, surveying and mapping, tests, evaluations, consultations, comprehensive planning, program management, conceptual designs, plans and specifications,

value engineering, construction phase services, soils engineering, drawing reviews, preparation of operating and maintenance manuals, and other related services.

b. Planning Services. Professional services of a planning firm to include: airport master and system plan studies, airport noise compatibility plans (FAR Part 150 studies), and environmental assessments and related studies.

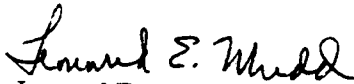
c. Consultant. A firm—an individual, a partnership, a corporation, or a joint venture—that performs architectural, engineering or planning services, as defined in paragraphs 6a and 6b, employed to un-

dertake work funded under an FAA airport grant assistance program.

d. Primary Engineer or Principal Consultant. A firm which is held responsible for the overall performance of the service, including that which is accomplished by others under separate or special service contracts.

e. Fee. Compensation paid to the consultant for professional services rendered.

f. Sponsor. An airport owner or a public or planning agency which has submitted an application under an FAA airport grant assistance program.



Leonard E. Mudd

Director, Office of Airport Safety and Standards

CONTENTS

CHAPTER 1. TYPES OF CONSULTANT SERVICES

1-1. Consultant Services	1-1
1-2. Aviation Planning Services	1-1
1-3. Architect/Engineer Services for Airport Development Projects	1-1
1-4. Special Services	1-2

CHAPTER 2. PROCEDURES FOR SELECTION OF CONSULTANTS

2-1. General	2-1
2-2. Objective	2-1
2-3. Qualifications-Based Selection Procedures	2-1
2-4. Other Services	2-1
2-5. Selecting Organization	2-2
2-6. Policy for Selection	2-2
2-7. Selection Criteria	2-2
2-8. Selection Procedures	2-3
2-9. Alternate Selection Procedures	2-4
2-10. Selection Procedures for EIS Preparation	2-5
2-11. Scope of Services	2-5
2-12. Cost Estimate	2-5
2-13. Negotiations	2-6
2-14. Sponsor-Force Account Projects	2-6

CHAPTER 3. CONTRACT FORMAT AND PROVISIONS

3-1. General	3-1
3-2. Contract Format	3-1
3-3. Division of Responsibility and Authority	3-1
3-4. Mandatory Contract Provisions	3-1
3-5. Time Overruns Beyond Control of the Consultant	3-2
3-6. Ownership of Drawings and Contract Documents	3-2
3-7. Contract Checklist	3-2
3-8. FAA Contract Review	3-2
3-9. FAA Contract Approval	3-2

CHAPTER 4. METHODS OF CONTRACTING AND ALLOWABLE COSTS

4-1. General	4-1
4-2. Per Diem	4-1
4-3. Retainer	4-1
4-4. Cost Plus a Fixed Payment	4-2
4-5. Fixed Lump-Sum Payment	4-2

4-6. Cost Plus a Percentage of Cost	4-2
4-7. Phasing of Work	4-3
4-8. Allowable Costs	4-3
4-9. Nonallowable Costs	4-4
4-10. Fixed Payment	4-4

APPENDICES

Appendix 1.	Contractor Contractual Requirements (2 pages)
Appendix 2.	Proposed Scope of Work (4 pages)
Appendix 3.	Consultant Services Costs (2 pages)
Appendix 4.	Detailed Cost Analysis (1 page)
Appendix 5.	Sample Record of Negotiation (2 pages)

CHAPTER 1. TYPES OF CONSULTANT SERVICES

1-1. CONSULTANT SERVICES. There are two separate and distinct categories of consultant services that are utilized for projects conducted under airport grant programs. The first category involves planning services. The second involves A/E services for the design and construction of airport projects. These two categories of consultant services are discussed below:

1-2. PLANNING SERVICES. This category includes studies under the broad headings of airport system and master planning, airport noise compatibility planning (FAR Part 150 studies), and environmental assessments and related studies. These studies normally include a number of activities. Examples are:

- a. Design study to establish the framework and detailed work program.
- b. Airport data collection and facility inventories.
- c. Aeronautical activity forecasts and demand/capacity analyses.
- d. Facility requirements determination.
- e. Airport layout and terminal area plans development.
- f. Airport noise exposure maps and noise compatibility plans (FAR Part 150 studies), and environmental assessments and related studies.
- g. Compatible land-use planning in the vicinity of airports.
- h. Airport site selection studies.
- i. Airport development schedules and cost estimates.
- j. Airport financial planning.
- k. Participation in public information and community involvement programs and/or public hearings relating to airport development and planning projects.

1-3. ARCHITECT/ENGINEER SERVICES FOR AIRPORT DEVELOPMENT PROJECTS. This category includes the basic A/E services normally required for airport development projects. It involves services generally of an architectural, civil, geotechnical, structural, mechanical, and electrical engineering nature. In addition, there may be some services outside those normally considered basic which are

discussed in paragraph 1-4. The basic services are usually conducted in the four distinct and sequential phases summarized below:

a. Preliminary Phase. This phase involves those activities required for defining the scope of a project and establishing preliminary requirements. Some examples of activities within this phase of a project include:

(1) Conferring with the sponsor on project requirements, finances, schedules, early phases of the project, and other pertinent matters and meeting with FAA and other concerned agencies and parties on matters affecting the project.

(2) Planning, procuring, and/or preparing necessary surveys, geotechnical engineering investigations, field investigations, and architectural and engineering studies required for preliminary design considerations.

(3) Developing design schematics, sketches, environmental and aesthetic considerations, project recommendations, and preliminary layouts and cost estimates.

b. Design Phase. This phase includes all activities required to undertake and accomplish a full and complete project design. Examples include:

(1) Conducting and attending meetings and design conferences to obtain information and to coordinate or resolve design matters.

(2) Collecting engineering data and undertaking field investigations; performing geotechnical engineering studies; and architectural, engineering, and special environmental studies.

(3) Preparing necessary engineering reports and recommendations.

(4) Preparing detailed plans, specifications, and cost estimates.

(5) Printing and providing necessary copies of engineering drawings and contract specifications.

c. Bidding or Negotiation Phase. These activities are sometimes considered as part of the construction phase. They involve assisting the sponsor in advertising and securing bids, negotiating for services, analyzing bid results, furnishing recommendations on

the award of contracts, and preparing contract documents.

d. Construction Phase. This phase includes all basic services rendered after the award of a construction contract, including (but not limited to) the following activities:

(1) Providing consultation and advice to the sponsor during all phases of construction.

(2) Representing the sponsor at preconstruction conferences.

(3) Inspecting work in progress periodically and providing appropriate reports to the sponsor.

(4) Reviewing and approving shop and erection drawings submitted by contractors for compliance with design concept.

(5) Reviewing, analyzing, and approving laboratory and mill test reports of materials and equipment.

(6) Preparing and negotiating change orders and supplemental agreements.

(7) Observing or reviewing performance tests required by specifications.

(8) Determining amounts owed to contractors and assisting sponsors in the preparation of payment requests for amounts reimbursable from grant projects.

(9) Making final inspection and submitting a report of the completed project to the sponsor.

1-4. SPECIAL SERVICES. The development of some projects may involve activities or studies outside the scope of the basic design services routinely performed by the consultant. These special services may vary greatly in scope, complexity, and timing and may involve a number of different disciplines and fields of expertise.

Consultants performing special services may be employed directly by the sponsor to implement one or more phases of a project or may be employed by the

principal consultant via a subcontractual agreement. In certain instances, these services may be performed by the principal consultant. Some examples of special services that might be employed for airport projects include:

a. Soils investigations, including core sampling, laboratory tests, related analyses, and reports.

b. Detailed mill, shop, and/or laboratory inspections of materials and equipment.

c. Land surveys and topographic maps.

d. Field and/or construction surveys.

e. Photogrammetry surveys.

f. Onsite construction inspection and/or management involving the services of a full-time resident engineer(s), inspector(s), or manager(s) during the construction or installation phase of a project. This differs from the periodic inspection responsibilities included as part of the basic services.

g. Special environmental studies and analyses.

h. Expert witness testimony in litigation involving specific projects.

i. Project feasibility studies.

j. Public information and community involvement surveys, studies, and activities.

k. Preparation of as-constructed plans.

l. Assisting the sponsor in the preparation of necessary applications for local, State, and Federal grants.

m. Preparation of or updating the airport layout plan.

n. Preparation of property maps.

o. Construction management.

p. Preparation of quality control plan.

q. Preparation of final report.

CHAPTER 2. PROCEDURES FOR SELECTION OF CONSULTANTS

2-1. GENERAL. The procedures included in this chapter are provided as a guide for sponsors in selecting consultants for work under Federal airport grant programs. Adherence to these procedures will assure a sponsor of compliance with the requirements of 49 CFR 18, Section 18.36 and Section 511, paragraph (a)(16) of the Airport and Airway Improvement Act (AAIA) of 1982, as amended.

a. 49 CFR 18. 49 CFR Section 18.36(t) requires that grantees and subgrantees extend the use of qualifications-based (e.g., architectural and engineering services) contract selection procedures to certain other related areas and award such contracts in the same manner as Federal contracts for architectural and engineering services are negotiated under Title IX of the Federal Property and Administrative Services Act of 1949, or equivalent State or sponsor qualifications-based requirements.

b. Airport and Airway Improvement Act. Section 511, paragraph (a)(16) of the AAIA states:

"Each contract or subcontract for program management, construction management, planning studies, feasibility studies, architectural services, preliminary engineering, design engineering, surveying, mapping, or related services with respect to the project will be awarded in the same manner as a contract for architectural and engineering services is negotiated under Title IX of the Federal Property Administrative Services Act of 1949, or an equivalent qualifications-based requirement prescribed for or by the sponsor of the airport."

In addition to the services described in Section 511, the professional and incidental services listed in paragraph 6a(3), DEFINITIONS, must also be procured using qualifications-based procedures.

If a conflict exists between 49 CFR Section 18.36 and the enabling legislation (AAIA), the enabling legislation will prevail.

c. Title IX. Title IX, more commonly referred to as the "Brooks Act" requires that qualifications-based selection procedures be used for the selection of firms to perform architectural and engineering services. Qualifications-based procedures require that a contract for architect/engineering services be awarded pursuant to a fair and open selection process based on the qualifications of the firms. The fees for such services are

established following selection of a firm through a negotiation process to determine a fair and reasonable price.

2-2. OBJECTIVE

a. The selection of consultants should be made on the basis of fair negotiations and equitable fees and through selection procedures that are professionally acceptable, ensure maximum open and free competition, and avoid any suggestion of unfair or unethical conduct.

b. Consultants employed for work on projects involving airport grants should be responsible and possess the ability to perform successfully under the terms and conditions of the proposed procurement. Consideration should be given to such matters as integrity, record of past performance, extent of experience with the type of services required by the sponsor, technical resources, and accessibility to other necessary resources.

2-3. QUALIFICATIONS-BASED SELECTION PROCEDURES. Consultants must be engaged on the basis of their qualifications and experience, with fees determined through negotiations following selection. This can be accomplished by means of qualifications-based selection procedures, whereby statements of qualifications are requested from a number of sources. The qualifications of consultants responding are evaluated, and the best qualified is selected, subject to a mutual understanding of the scope of services and negotiation of a fair and reasonable fee.

2-4. OTHER SERVICES.

a. Where services are to be performed in conjunction with the architectural or engineering (A/E) services, they should be contracted for in the course of procuring the A/E services.

b. Where services such as feasibility studies, construction management, program management and other services as defined in paragraphs 6a(2), 6a(3), and 6b, DEFINITIONS are to be performed, but are not included in the basic A/E services, they should be procured using qualifications-based procedures.

c. Where services are to be performed that are not in conjunction with A/E services and do not require performance by a registered architect or engineer,

the services should be acquired using local procurement procedures. An example of this type of special service would be soil borings, whereby the boring layout plan and interpretations of tests are not performed by the boring contractor. Soil borings conducted as part of a geotechnical engineering investigation, or for which an independent engineer is responsible, should be procured either in the course of procuring A/E services or by using qualifications-based procedures.

d. Where services are to be performed in assisting the FAA in preparing an Environmental Impact Statement (EIS), they should be procured using qualifications-based procedures.

2-5. SELECTING ORGANIZATION.

a. Within the sponsor's organization, an administrative policy should be established for designating persons authorized to select or recommend consultants for various assignments. The persons designated may include the administrator or the department head to be supplemented by others making up a selection board. The persons empowered to make the selection must be kept free of pressures, both internal and external.

b. The usual procedure for selecting consultants is to use a selection board of at least three persons, one of whom should be an engineer, airport planner, or other professional knowledgeable of the service required. For projects that have special design requirements or are particularly complex, the selection board should have additional technical members. The board should be prepared to evaluate potential consultants, i.e., conduct interviews and inquiries as desired and make recommendations. Based upon the recommendations of the board, the administrator or the governing body should make the final selection of the consultant(s).

2-6. POLICY FOR SELECTION. The selection of consultants should be based on a comparative analysis of the professional qualifications necessary for satisfactory performance of the service required. Moreover, the selection process should satisfy requirements for open and free competition. Sponsors may procure a consultant for several grant projects through one procurement action provided the following conditions are met:

a. The consultant is selected using the qualifications-based selection procedures described in paragraph 2-8.

b. All parties competing for the work are advised that the work will be accomplished over the course of several grant projects. The expected schedule of projects must be defined, together with the scope of work and the required services. The scope of work should be described in sufficient detail so that all parties

are adequately informed of the items to be accomplished.

c. All parties are advised that some of the services may not be required and that the sponsor reserves the right to initiate additional procurement action for any of the services included in the initial procurement.

d. The services are limited to those projects which are expected to be initiated within 5 years of the date the contract is signed by the consultant.

e. The fee is limited to the services to be performed under the initial grant. The contract shall be limited to the services covered by the fee.

f. The negotiation of the fee for subsequent services, i.e., those included in the procurement action but not in the initial contract, shall occur at the time those services are needed. A cost analysis must be performed for each of these negotiations. (See paragraph 2-11 for information on cost analysis.) If a price cannot be agreed upon between the sponsor and the selected firm, negotiations are formally terminated and a new procurement action is then initiated.

2-7. SELECTION CRITERIA. Prior to evaluating consultants, it is recommended that the sponsor's organization develop an agreed-upon list of criteria to be used in evaluating potential consultants. Numerical rating factors (ranges) should be assigned to each criterion on the basis of the sponsor's priorities and conception of the importance of each factor in the attainment of a successful project. Suggested criteria include, but are not limited to, the following:

a. Capability to perform all or most aspects of the project, such as planning, environmental evaluations, financial analysis, architectural design, and mechanical, electrical, and civil engineering.

b. Recent experience in airport projects comparable to the proposed project.

c. Reputation for personal and professional integrity and competence.

d. Evidence that consultant has established and implemented an Affirmative Action Program.

e. Key personnel's professional background and caliber and availability for the proposed project.

f. Current workload.

g. Recent experience in special areas associated with the project such as energy conservation and life-cycle costing.

h. Capability to conduct a value engineering study for projects that are particularly complex or have unique features. It is recommended that value engineering be one of the criterion for large, complex

projects, such as terminal buildings, where the estimated cost is \$1 million or more. The savings that result from a value engineering study as a rule are 3 to 5 percent of construction costs. On the other hand, the cost of a value engineering study is approximately 0.2 to 0.4 percent of construction costs.

i. Demonstrated ability to meet schedules or deadlines.

j. Capability to complete projects without having major cost escalations or overruns.

k. Qualifications and experience of outside consultants regularly engaged by the consultant under consideration.

l. Quality of projects previously undertaken.

m. Familiarity with and proximity to the geographic location of the project.

n. Knowledge of FAA regulations, policies, and procedures.

o. Capability of a branch office which will do the work to perform independently of the home office, or conversely, its capability to obtain necessary support from the home office.

p. Demonstrate an understanding of the project's potential problems and the sponsor's special concerns.

q. Degree of interest shown in undertaking the project.

r. Capability to incorporate and blend aesthetic and architectural concepts with the project design while accomplishing the basic requirements that transportation facilities be functional, safe, and efficient.

s. Capability to furnish qualified inspectors for construction inspection.

2-8. SELECTION PROCEDURES. The following selection procedures are recommended for projects involving Federal airport grants: An equivalent State or sponsor qualifications-based requirement may be used.

a. The selection board should review the nature of the proposed project and the general scope of services to be procured in order to ensure an understanding of the project requirements and the qualifications needed by the consultant.

b. The board should develop the selection criteria and the evaluation system to be used in preparing a preselection list of consultants who are best qualified for the project and in determining the final selection.

c. To obtain experience and qualification data from potentially qualified consultants and to ensure the broadest publicity concerning the sponsor interest in obtaining consultant services, public announcements

for all projects should be advertised in local newspapers with a wide circulation and national trade journals and magazines. The public announcement should include such information as a description of the proposed project and its location, a description of the services to be procured, and the estimated construction cost. The announcement should also invite consultants to submit their experience and qualification data relating to the proposed project. The request for qualifications may not contain a request for any type of pricing data, including workhours.

d. Sponsors may also send the public announcements directly to known, potentially qualified consultants to determine their interest in the project and to request their experience and qualification data.

e. Affirmative steps should be taken to assure that small and minority firms are used whenever possible. These steps should include, but not be limited to, the following:

(1) Include qualified small business and minority firms on solicitation lists.

(2) Assure that small business and minority firms are solicited whenever they are potential sources.

(3) Divide the total requirements into small tasks, when economically feasible, to permit maximum small business and minority firm participation.

(4) Use the services and assistance of the Small Business Administration and the Disadvantaged Business Enterprise Agency of the Department of Commerce.

f. There are many sources from which the names of consultants can be obtained. These include: the Membership Directory of the Airport Consultants Council; the Professional Services Directory of the Civil Engineering Magazine, published by the American Society of Civil Engineers (ASCE); Directory of Engineers in Private Practice, published by the National Society of Professional Engineers (NSPE); directory from the American Institute of Architects (AIA); the directory of the American Consulting Engineers Council (ACEC); professional services directories published in aviation magazines and trade journals; other airport operators having undertaken similar projects; State boards of professional engineering registration; State aviation agencies; and local classified telephone directories. FAA Airports field offices may also furnish the names of consultants who have engaged in projects of similar nature in their areas of jurisdiction. However, FAA personnel will not recommend consultants or participate in the selection process. The address of regional Airports Divisions and Airports District/Field Offices having jurisdiction over specific geographic areas are listed in the current edition of AC

150/5000-3, Address List of Region Airports Divisions and Airports District/Field Offices.

g. From the experience and qualification data obtained from consultants, the selection board should prepare a preselection list of the best qualified consultants for further consideration. The list should consist of at least three consultants but preferably no more than five.

h. At this point, consultants who expressed an interest in the project but were not included on the preselection list should be notified that they were unsuccessful.

i. Detailed information on the qualifications and performance data of each of the consultants on the preselection list should be obtained. This can be achieved by contacting former clients to ascertain the quality of work, ability to meet schedules, cost control, and consultant-client relationship.

j. At this point, the scope of work and the services desired should be provided to each firm. The selection criteria, including their relative importance, that will be used to evaluate the proposals shall also be made available to each of the firms on the preselection list. The selection board should then obtain a general project proposal from each of the firms on the preselection list. The request for proposals may not contain a request for any cost information, such as total cost, cost per hour, workhours, or other pricing data. Requests for cost or pricing information, prior to discussions with the best qualified firm, to define the scope of services is contrary to Section 511(a)(16) of the AIA and 49 CFR 18.36(t). The general project proposal will help the selection board recommend a consultant who can achieve design excellence, while successfully controlling time and costs, and who has the ability to understand and accomplish the specialized requirements of the project. The elements of a typical general project proposal should include the following:

(1) Team members, other key personnel, previous experience, and the role they will fill on the project. The qualifications and time commitment of the project manager proposed for the project.

(2) Current workload.

(3) Proposed project schedule, including major tasks and target completion dates.

(4) Technical approach—a brief discussion of the tasks or steps that the consultant will undertake to accomplish the work described in the scope of work.

(5) Value engineering—when a value engineering study is included in the selection criteria, a

brief discussion of the consultant's capability, training, and experience to undertake such a study.

k. Conduct interviews with each consultant on the preselection list. A telephone interview may be sufficient, however, a visit to the consultant's office to obtain a better idea of their capabilities is suggested whenever practical.

l. Review the experience and qualification data, the general project proposal, the interview results, and other relevant data. Using the selection criteria developed for the project, rank the qualified consultants in order of preference.

m. Initiate discussions with the consultant ranked number one to fully define the scope of work and services to be provided (see paragraph 2-10). After agreement on a detailed scope of services has been reached, the consultant should submit their cost proposal together with a detailed project proposal. Negotiations should then be conducted to reach a fair and reasonable cost, subject to the procedures indicated in paragraphs 2-11 and 2-12.

n. Prepare a report recommending the consultant selected. The report should contain sufficient detail to indicate the extent of the review and the considerations used for the recommendations.

o. The report should be forwarded to the sponsor's administrator or governing body authorized to review the recommendations of the selection board. The recommendations of the selection board should normally be accepted unless the report does not adequately support the recommendations. This will help to ensure complete fairness and open competition. If the recommendations are not accepted, the selection board should be reconvened until acceptable recommendations have been agreed on.

2-9. ALTERNATE SELECTION PROCEDURES.

a. **Proposals Requested With Qualification Data.** The selection procedure recommended in paragraph 2-8 should normally be followed in the procurement of consulting services. However, for small projects where the scope of work and services can be clearly defined or the sponsor anticipates receipt of less than four proposals, the sponsor may wish to solicit proposals at the time of advertising for experience and qualification data. In this case, the announcement must contain a detailed scope of services and indicate where the selection criteria can be obtained. The advertisement cannot request pricing information. The procedures as detailed in paragraph 2-8 must be followed, with modifications where necessary.

b. **Informal Procedures.** Informal qualifications-based procedures may be used for procurements where the cost is estimated to be under \$25,000. Under

this procedure, a sponsor should call at least three firms and discuss their qualifications to perform the work. Negotiations should then be conducted with the best qualified firm to arrive at a cost. These negotiations may be conducted via telephone. Sponsors should consult with FAA Airports personnel before using these alternatives to assure that the circumstances justify their use. After selection, using this procedure, the sponsor must submit a statement to the FAA explaining the basis used to determine reasonableness of cost. This may include:

- (1) sponsor cost estimate.
- (2) reasonable in comparison with previous contract of a similar nature.
- (3) reasonable based on previous business experience.

2-10. SELECTION PROCEDURES FOR ENVIRONMENTAL IMPACT STATEMENT (EIS) PREPARATION. The procurement of consultant services to assist the FAA in preparing an EIS is somewhat unique because the regulations implementing the National Environmental Policy Act (NEPA) of 1969, (42 U.S.C. 4321 *et seq.*), require Federal agencies to prepare the EIS or select the contractor that prepares the EIS. Selection of a consultant shall, therefore, be made by the FAA from a preselected list of qualified consultants submitted by the sponsor. The sponsor and the FAA shall follow the selection procedures recommended in paragraph 2-8 with the following exceptions:

- a. The proposed scope of work is to be provided by the FAA.
- b. The FAA shall concur with the selection and evaluation criteria prepared by the sponsor.
- c. The FAA will be invited to participate with the sponsor in the interviews with consultants on the preselection list.
- d. The sponsor may indicate to the FAA their ranking of the consultants on the preselection list after the interview process has been concluded. The FAA, however, is under no obligation to make a selection based on this ranking.
- e. Using the previously Sponsor/FAA agreed upon selection and evaluation criteria, the FAA will independently evaluate and rank the consultants on the preselection list in order of preference, based on qualifications.
- f. The FAA shall advise the Sponsor the FAA's ranking in order of preference, and the Sponsor shall advise and initiate discussions with the consultant ranked number one.

g. The FAA's involvement in the negotiation of the project cost shall be limited to making a reasonableness determination once a satisfactory cost proposal has been reached between the Sponsor and the consultant.

h. The FAA shall prepare a selection report for its records.

2-11. SCOPE OF SERVICES.

a. An important step in the negotiation process is to reach a complete and mutual understanding of the scope of services to be provided. The general scope of services developed during initiation of the procurement process is of necessity too broad to serve as the basis for a contractual agreement. A detailed scope of services must be developed at a meeting between the sponsor and the first-ranked consultant prior to the start of negotiations. The sponsor's engineer or independent consultant (see paragraph 2-12b) should attend the meeting so they will have a complete understanding of the scope of work prior to developing a detailed cost estimate. Such a meeting offers the opportunity for refinement, amendment, and complete definition of the services to be rendered.

b. The scope of services shall be sufficiently detailed so that the consultant can make a reasonable cost estimate. The following items are typical of those that should be considered while developing the scope of services:

- (1) list of meetings the consultant is expected to attend
- (2) design schedule
- (3) special services required
- (4) complexity of design
- (5) safety and operational considerations
- (6) environmental considerations
- (7) survey and geotechnical testing requirements
- (8) inspection services during construction
- (9) quality control during construction
- (10) preparation of forms, letters, and documents
- (11) ALP updates
- (12) property map preparation

Appendix 2 contains an example of a detailed scope of services.

2-12. COST ESTIMATE.

a. In order to properly evaluate the consultant's cost proposal, a sponsor having a staff with experience

in estimating the cost of professional services and negotiating contracts for these services shall develop their own estimate of the cost of the services, based on the scope of services agreed upon in paragraph 2-11. The sponsor is responsible for developing the scope of services, estimating the cost of professional services, and negotiating contracts for these services. Sponsors having no staff with this expertise or having little or no previous experience may not be able to perform these services in-house. In these instances, if the sponsor has on retainer a consultant who has experience with the services involved and who is not being considered for the project, the sponsor may engage the consultant to develop the scope of work and the cost estimate. State aviation personnel may also be used.

b. Alternatively, an independent engineering, architecture, or planning firm shall be retained by the sponsor to aid in developing the scope of work and/or a cost estimate for professional services. A preliminary cost estimate should be made prior to advertising for a statement of qualifications and experience and a detailed cost estimate shall be made after discussions to determine a detailed scope of work (see paragraph 2-11). The firm retained to make the detailed cost estimate and/or scope of work should not have been on the preselection list. The firm shall have recent experience in airport work similar to that proposed and be familiar with FAA requirements and procedures. The sponsor should request evidence that the firm meets these requirements.

The firm hired to perform any of these functions may be retained using informal qualifications-based procedures if the cost is under \$25,000 (see paragraph 2-9b); however, that firm will not be eligible for consideration for work on the project.

c. The sponsor must have a detailed cost estimate in order to properly evaluate the cost of professional services. Figures 1 and 2, contained in Appendix 3, present a suggested format for computing estimated costs of consultant services for the design and construction phases of a project. The detailed cost estimate should be made only after the scope of services has been agreed on with the first ranked consultant.

d. Prior to initiating further discussions with the first ranked consultant, the sponsor shall sign and date the independent cost estimate and retain a copy for record purposes.

2-13. NEGOTIATIONS.

a. After developing a detailed scope of services and a cost estimate, the sponsor shall enter into negotiations with the consultant given first preference by the selection board. At this time the sponsor may elect to inform the other firms on the short list that negotiations have been initiated with the first ranked firm. If

an independent firm has been retained by the sponsor for the purpose of preparing a cost estimate, they may be consulted by the sponsor during negotiations, to clarify problem areas, but shall not review the consultants cost proposal or attend any negotiating sessions.

b. Based on the scope of services agreed upon in paragraph 2-10, the sponsor shall request the consultant to submit the proposed fee and supporting cost breakdown. The consultant shall prepare a detailed estimate of the hours and cost required for each of the major tasks. In addition to charges for labor, the consultant should, if appropriate, indicate the costs for subcontractors, travel, living expenses, reproduction, and other out-of-pocket expenses expected to be incurred.

c. Negotiations should be based upon the data submitted by the consultant and an evaluation of the specific workhours required for each task. The sponsor should subject the consultant's data to a technical/engineering analysis. Based on this analysis, the sponsor should identify differences in the work-hour estimates. Significant differences, either positive or negative, between the estimate submitted by the consultant and the estimate developed by the sponsor should be resolved, and revisions should be made to the workhours or scope of work as required. The cost should then be evaluated, taking into consideration the experience level required by the engineer working on each task. A sample cost analysis form is shown in Appendix 4.

d. If a mutually satisfactory contract cannot be negotiated with the first-ranked consultant, the negotiations should be terminated and the consultant should be notified. Negotiations should then be initiated with the consultant given second preference by the selection board. This procedure should be continued with recommended consultants in the sequence of ranking established by the selection board until a mutually satisfactory contract has been negotiated. Once negotiations have been terminated with a firm and begun with another, they cannot be reopened with the former firm.

e. A record of negotiations shall be prepared by the sponsor and included in a contract file. This record shall contain sufficient detail to reflect any changes in the scope of work controlling the establishment of the cost and other terms of the contract. An explanation shall be provided for any significant differences between the sponsor's original estimate and the cost finally agreed upon. A sample Record of Negotiations is contained in Appendix 5.

The scope of work, draft contract, sponsor's independent cost estimate, consultants cost proposal with any revisions, and detailed cost analysis shall be attached to the report.

f. Upon completion of successful negotiations, all consultants interviewed by the selection board should be informed of the consultant selected for the project.

g. FAA personnel will not be present and will not participate in the negotiation process. The FAA's role is to make a judgement on the reasonableness of the compensation for the services to be furnished and to ensure that all services required for a particular project have been included in the proposal.

h. The record of negotiations and all attachments shall be submitted to the FAA for a reasonableness of cost determination.

2-14. SPONSOR-FORCE ACCOUNT

PROJECTS. Just as steps are taken in the selection process to assure that consultant services under contract will be acceptable, timely, and financially prudent, so should steps be taken to assure that the same services to be done by force account also meet such aims. Accordingly, the FAA requires that proposals for these types of services by force account be submitted in writing and that FAA approval be obtained prior to

the start of any of the work. The proposal should include as a minimum:

a. Names and engineering qualifications of personnel performing the work and their capabilities for design, supervision, planning, inspection, testing, etc., as applicable.

b. Details of experience with airport projects of like or similar nature.

c. Detailed scope of work.

d. Information on workload as it may affect capacity to do the work within a required timeframe or work schedule.

e. Justification for doing the work by force account rather than by contract.

f. A complete cost breakdown showing (1) the number of work hours and cost per hour for each category of labor, (2) a list of nonsalary costs such as travel, materials, supplies, equipment, etc. A limit on the total cost should be specified in the proposal.

CHAPTER 3. CONTRACT FORMAT AND PROVISIONS

3-1. GENERAL.

a. The relationship of the consultant with the sponsor should be clearly defined by a written agreement before commencement of actual work. All of the terms should be clearly defined in the agreement. It should state the parties to the contract and define the complete extent and character of the work to be performed as well as conditions relating to any time limitations which may be involved. The terms and payments for various services should be included. The scope of the consultant effort should be described in complete detail to determine the sufficiency of the supervisory and inspection staff and to determine whether some services will need to be otherwise contracted for or be provided by the sponsor.

b. Consultant contracts usually cover highly technical services. Therefore, to assure the soundness of a legal document, it is essential that someone who has thorough knowledge of the project prepare the sections describing services to be performed, sequence of work, information to be furnished by the sponsor, and terms of payment.

3-2. **CONTRACT FORMAT.** Many government agencies, business firms, and engineering organizations have developed standardized forms for engineering and planning contracts. The American Consulting Engineers Council, the National Society of Professional Engineers, and the American Society of Civil Engineers have developed such standardized forms. Some State aviation departments have developed standardized forms for engineering services provided in their own states. The American Institute of Architects has standardized forms for architectural contracts. It is generally necessary to modify these standard agreements to reflect the specific terms and conditions applicable to a particular project, as well as the mandatory contract provisions in paragraph 3-4.

3-3. DIVISION OF RESPONSIBILITY AND AUTHORITY.

a. It is common to have one firm provide the basic services and one or more others provide special services. In these cases, the firm providing the basic consultant services is considered the primary engineer or principal consultant as defined in paragraph 6d, **DEFINITIONS**. As such, the principal consultant represents the sponsor in coordinating and overseeing the

work of other engineering/consultant firms and has the overall responsibility for the acceptability and quality of the work. It is, therefore, extremely important that the contract documents clearly specify the division of responsibility and authority between all parties engaged in carrying out elements of the project.

b. The contract between the airport sponsor and the consultant should establish the scope of work based on carrying out his/her professional duties under the requirements of law. Such contract should not attempt to make the consultant an indemnitor, nor should it permit him/her to limit his/her liability in performing services needed for a project funded under a grant.

3-4. **MANDATORY CONTRACT PROVISIONS.** All contracts involving airport development projects or airport planning must contain the applicable procurement standards in 49 CFR 18.36. Listed below are those provisions which pertain to consultant contracts:

a. Contracts shall contain provisions or conditions which will allow for administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms and provide for sanctions and penalties as may be appropriate.

b. Contracts over \$10,000 shall contain suitable provisions for termination by the sponsor, including the manner by which it will be effected and the basis for settlement. In addition, contracts shall describe conditions under which the contract may be terminated for default as well as conditions where the contract may be terminated because of circumstances beyond the control of the consultant.

c. All negotiated contracts shall include provisions to the effect that sponsors, the Federal Aviation Administration, the Comptroller General of the United States, or any of the duly authorized representatives shall have access to any books, documents, papers, and records of consultants which are directly pertinent to a specific grant program, for the purpose of making audits, examinations, excerpts, and transcriptions. Sponsors shall require consultants to maintain all required records for 3 years after the sponsor makes final payment and all other pending matters are closed.

d. In addition to the requirements contained in 49 CFR Section 23, Participation by Minority Business Enterprises in Department of Transportation Programs,

and AC 150/5100-15, Civil Rights Requirements for the Airport Improvement Program, current edition, the Title VI and Disadvantaged Business Enterprise Assurances in Appendix 1 shall be included in each contract.

3-5. TIME OVERRUNS BEYOND CONTROL OF THE CONSULTANT. Frequently, the consultant is called upon to continue technical inspection services on construction contracts—overrunning the program schedule contemplated at the time of negotiation. In most instances, the time element is beyond the control of the consultant. To provide for the contingency of overrun of time, the agreement between the sponsor and the consultant should state the period for which the compensation shall apply and that the consultant shall be reimbursed for services in excess of the specified period of time at a mutually acceptable fee negotiated at the time all the pertinent circumstances are known.

3-6. OWNERSHIP OF DRAWINGS AND CONTRACT DOCUMENTS.

a. Original documents, such as tracings, plans, specifications, maps, basic survey notes and sketches, charts, computations, and other data prepared or obtained under the terms of the contract, are instruments of service and generally should remain the property of the consultant unless otherwise agreed to by both parties. Reproducible copies of drawings and copies of other pertinent data should be made available to the sponsor upon request. Copies of disks containing all drawings should be furnished to the sponsor.

b. When a contract is for preliminary plans only, no commitment that would constitute a limitation on the subsequent use of the preliminary plans or ideas incorporated therein should be stated or implied.

3-7. CONTRACT CHECKLIST. The following checklist identifies some of the more important items and provisions to be considered in preparing any contract for consultant services:

- a. Effective date of contract.
- b. Names and descriptions of the parties to the agreement with their addresses and, in the case of a corporate body, the legal description of the corporation.
- c. Nature, extent, and character of the project, the location thereof, and the time limitations.
- d. Services, including performance and delivery schedules, to be rendered by the consultant.
- e. Delineation of responsibilities of the consultant, the sponsor, and other consultants and parties involved in the performance of the project.
- f. Delineation of the duties and responsibilities of the resident engineer/inspector.

g. Inclusion of mandatory contract provisions as discussed in paragraph 3-4.

h. Provision for renegotiation of the contract on the basis of change in the scope of the project, changes in conditions, additional work, etc.

i. Provision that reproducible copies of planning and design drawings and specifications be made available to the sponsor upon request.

j. Compensation, including methods of payment and payment schedules, for services to be rendered by consultants.

k. Provision for the termination of the consultant services before completion of work.

l. Provision for preparation of a Quality Control Plan as required by the special provisions of the grant agreement.

m. Provision for preparation of an Engineer's Design Report.

3-8. FAA CONTRACT REVIEW. FAA Airports field office personnel are available to assist the sponsor and provide guidance on:

- a. The scope of the services to be provided.
- b. The appropriate type of contract.
- c. The mandatory contract provisions to be included.

3-9. FAA CONTRACT APPROVAL.

a. A sponsor's proposed contract must have preaward review and approval in any of the following circumstances:

(1) The sponsor's procurement system is not in compliance with one or more significant aspects of 49 CFR 18.

(2) The procurement is expected to exceed \$25,000 and is to be awarded without competition or only one response is received in response to the request for qualification and experience data.

b. The FAA may require preaward review and approval of a sponsor's proposed contract under any of the following circumstances:

(1) The sponsor's procurement system has not yet been reviewed by the FAA for compliance with 49 CFR 18.

(2) The sponsor has requested preaward assistance.

(3) The proposal is one of a series with the same firm.

CHAPTER 4. METHODS OF CONTRACTING AND ALLOWABLE COSTS

4-1. GENERAL. The computation of charges and compensation methods for consultant services are dependent on the type of services required and specific circumstances relating to the individual project. The various types of contracts and methods of compensation are discussed below. Contracts may be negotiated to include a combination of two or more of these methods.

4-2. PER DIEM.

a. Direct personal services are usually charged on a per diem basis. This method is particularly suited to court work or similar efforts involving intermittent personal service.

b. When such consulting or expert services are furnished, the consultant is compensated for the time devoted to the work and to travel time. The per diem charge should be based on the complexity of the work involved and the experience of the consultant. In addition to the compensation based on per diem, the consultant is reimbursed for travel and other out-of-pocket expenses incurred while away from the normal place of business provided they are reasonable, allocable, and of a generally allowable nature.

c. For services in court or on other engagements in which the consultant appears as an expert, a per diem charge is considered to be earned for each day of such appearance, although the consultant may not be called to testify or, if called, may finish his/her testimony in a fraction of the day.

d. On occasions, the urgency of the engagement requires the consultant to work longer than the normal day. In some instances, this requirement is a necessary feature of the services, and an understanding should be made with the sponsor as to what constitutes a day. In such cases, the per diem rate may be based on the normal number of working hours per day, or the per diem rate may be increased to take into consideration the extended work day.

e. For certain kinds of work, compensation based on hourly rates is an equitable arrangement. Compensation for consultant service on an hourly basis demands a higher rate per hour than would be represented in a per diem rate. Also, the hourly rates should apply to time for travel involved plus reim-

bursement for travel costs, subsistence, and other out-of-pocket expenses. Depending on the duration of the services, compensation on an hourly basis may include an agreement on a preset minimum amount or retainer in addition to the payments based on the hourly rates.

f. If public hearings are involved in the consultant services, determination of the fee could present a problem since extensive hearings and followup work may be required. In these instances, the per diem approach may be considered as an appropriate method of payment for services rendered subsequent to the initial hearing. An estimated upper limit should be set forth in the contract. The contract should provide for renegotiation of the upper limit if unforeseeable conditions are encountered.

4-3. RETAINER.

a. The employment of consultants on a retainer basis is a common practice. This practice assures the sponsor of always having the services of a certain individual engineer or organization available for future work. This method is used in cases of protracted litigation or for work over the years when the calls on the consultant may be intermittent. It is also used in the development of undertakings for which the services of a consultant specialist are not required on a full-time basis. On large projects, this method enables the sponsor to have the specialists who prepared the original plans and specifications on hand for maintenance or additions.

b. The retainer fee varies with the character and value of the services to the sponsor and with the reputation and standing of the consultant in his/her profession.

c. The terms of agreement for services on a retainer basis vary widely. Compensation may be based on a fixed sum, paid monthly, or on some other mutually agreeable basis, with per diem or hourly rates in addition for time spent at the request of the sponsor. In any case, the same principles, explained previously for per diem or hourly charges, govern under retainer contracts.

d. This type of contract is rarely used for grant projects. However, it is permissible to use a firm or

retainer for projects without further procurement action if:

(1) The retainer contract was awarded as a result of competition.

(2) The parties competing for the retainer were advised that subsequent grant funded projects (including the scope of services for those projects) would be performed under the retainer contract.

(3) The price for the work performed under the grant will be fair and reasonable and supported by a price or cost analysis.

e. Detailed records should be kept to identify that work which is a part of a Federal grant project and eligible for reimbursement.

4-4. COST-PLUS-A-FIXED PAYMENT.

a. The cost-plus-a-fixed payment contract is frequently used when the consultant is required to start work before the cost and scope of the project can be accurately determined. It is recommended that services for the construction phase of a project be paid for under a cost plus a fixed payment type contract.

b. This type of contract provides for reimbursement of allowable costs such as salary, overhead, and direct nonsalary expenses, plus a fixed payment.

c. A cost-plus-a-fixed payment proposal should be accompanied by the consultant's estimate. The estimate should detail the direct labor costs by categories of employees, work hours, and hourly rate; overhead; direct nonsalary expenses; and the fixed payment.

d. The payment is fixed and does not vary no matter what the costs turn out to be. In most instances, however, a ceiling is applied which establishes an upper limit on the allowable costs. In establishing the upper limit, an allowance for contingencies should be included so that, as such contingencies are encountered, renegotiation of the upper limit will not be necessary. The intent of the upper limit is to ensure that the allowable costs do not exceed an agreed-upon ceiling without prior approval of the sponsor. (If Federal participation is desired in the increased cost, the sponsor must obtain the prior approval of the FAA.) Such contracts should contain provisions that provide for renegotiation of both the upper limit and the fixed payment if the scope of work described in the contract has changed.

e. Any increase in costs should be fully justified by the consultant prior to approval by the sponsor. As the consultant is approaching the upper limit, and it becomes apparent that the project cannot be completed within that limit, he/she should alert the sponsor. Approval must be obtained before the upper limit is exceeded.

f. Overhead charges will vary according to the nature, type, diversity, size of firm, and number/amount of contracts currently held by the firm. The consultant should be prepared to validate the overhead costs with a certified statement from the sponsor's auditor, state's auditor, or consultant's accountant. If the consulting firm has been audited by an agency of the Federal Government within the previous 12 months, the overhead rate determined by this audit may be used.

g. Fixed payment is in addition to reimbursement for salary, overhead, and direct nonsalary expenses. The consultant is paid a fixed amount for profit, willingness to serve, and assumption of responsibility. This may be an amount based on the estimated design cost of the project at the time the consultant is engaged and will vary with the scope of the services involved.

4-5. FIXED LUMP-SUM PAYMENT.

a. The fixed lump-sum payment contract is normally used when the scope of work can be clearly and fully defined at the time the agreement for services is prepared.

b. The fixed amount of compensation is determined by estimating the allowable costs such as salary, overhead, and direct nonsalary expenses, plus a reasonable margin of profit—all expressed as a single lump sum. A lump sum proposal should be accompanied by the consultant's estimate. The estimate should detail the direct labor costs by categories of employees, work hours, and hourly rate; overhead; direct nonsalary expenses; and profit.

c. Where consultation is undertaken on a lump-sum basis, the agreement should contain a clearly-stated time limit during which the services will be performed. In design contracts, there should be a provision for changes required after the approval of preliminary designs with a clear understanding as to where the final approval authority lies.

d. Lump-sum contracts should contain a clause that provides for renegotiation if the scope of work described in the contract has changed.

4-6. COST-PLUS-A-PERCENTAGE-OF-COST.

Cost-plus-a-percentage-of-cost (CPPC) methods of contracting are prohibited for consultant services under airport grant programs. CPPC contracts may be defined as a payment formula based on a fixed predetermined percentage rate of actual performance costs by which the sum of the consultant's entitlement, uncertain at the time of agreement, increases commensurately with increased performance costs. The types of contracts discussed below are based on the CPPC methods of contracting and, therefore, are prohibited:

a. **Salary Cost Times a Multiplier, Plus Direct Nonsalary Expense.** This type contract contains CPPC methods of contracting because the consultant's indirect cost and profit are not fixed at the time the contract is signed.

b. **Percentage of Construction Costs.** This type contract contains CPPC methods of contracting since a portion of the consultant's fee which does not reflect actual costs constitutes a profit which is not fixed at the time the contract is executed.

4-7. PHASING OF WORK. Design projects may be negotiated to be performed in phases and include two or more of the foregoing methods of compensation. For example, the first phase of a project might cover the development of the precise scope of work for a project and be paid for under a cost-plus-fixed-payment contract. The follow-on work could then be negotiated on the basis of information developed in the first phase and might be accomplished under a lump-sum contract.

4-8. ALLOWABLE COSTS. Costs incurred must be consistent with the Federal cost principles contained in 48 CFR, Part 31, to be reimbursable under an airport planning or development grant. This document is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20406. The following are typical expenses allowable under the above regulations: Typical nonallowable costs are set forth in paragraph 4-9.

a. Direct Salary Costs.

(1) Direct salary cost is defined as the cost of salaries of engineers, draftsmen, surveyors, stenographers, clerks, etc., for time directly chargeable to the project.

(2) Salaries or imputed salaries of partners or principals, to the extent that they perform technical or advisory services directly applicable to the project, are to be added to salary cost.

b. **Overhead Costs.** Overhead costs include overhead on direct salary costs and general and administrative overhead.

(1) **Labor Overhead.** Overhead on direct salary costs includes sick leave, vacation, and holiday pay; unemployment, excise and payroll taxes; contributions for social security, employment compensation insurance, retirement benefits, and medical insurance benefits; and any other benefits customarily paid to or enjoyed by all employees. The allowable percentage for labor overhead allocable to a project is the ratio of (a) a firm's total direct labor overhead costs to (b) a firm's total direct salary costs (excluding overtime) for a given period, usually the average for the past 3 years.

(2) **General and Administrative Overhead.** General and administrative overhead includes the following indirect costs which are not directly attributable to specific projects.

(a) Provisions for office, light, heat, and similar terms for working space, depreciation allowances or rental for furniture, drafting equipment and engineering instruments, and office and drafting supplies not identifiable to specific projects.

(b) Taxes and insurance other than those included as salary cost, but excluding state and Federal income taxes.

(c) Library and periodical expenses, and other means of keeping abreast of advances in engineering such as attendance at technical and professional meetings and subscriptions to trade, business, professional, or technical periodicals.

(d) Executive, administrative, accounting, legal, stenographic, and clerical salaries and expenses (other than identifiable salaries included in salary costs and expenses included in reimbursable nonsalary expenses, plus salaries or imputed salaries of partners and principals) to the extent that they perform general executive and administrative services as distinguished from technical or advisory services directly applicable to particular projects.

(e) Costs of memberships in trade, business, technical, and professional organizations.

(f) Incentive compensation for management employees, cash bonuses, suggestion awards, safety awards, and incentive compensation based on production, cost reduction, or efficient performance are allowable to the extent that the overall compensation is determined to be reasonable, and such costs are paid or accrued pursuant to an agreement entered into in good faith between the consultant and the employees before the services are rendered or pursuant to an established plan followed by the consultant so consistently as to imply, in effect, an agreement to make such payment. The allowable percentage for general and administrative overhead allocable to a project is the ratio of (a) all general and administrative costs to (b) total direct salary costs (excluding overtime) for a given period, usually the average for the past 3 years.

c. **Direct Nonsalary Expenses.** Direct nonsalary expenses usually incurred may include the following (detailed records must be kept to support charges and allow auditing):

(1) Living and traveling expenses of employees, partners, and principals when away from the home office on business connected with the project. (Records must include employee name, dates, points of travel, mileage rate, lodging, and meals.)

(2) Identifiable communication expenses such as long-distance telephone, telegraph, cable, express charges, and postage, other than for general correspondence.

(3) Services directly applicable to the work such as special legal and accounting expenses, computer rental and programming costs, special consultants, borings, laboratory charges, commercial printing and bindings, and similar costs that are not applicable to general overhead.

(4) Identifiable drafting supplies and stenographic supplies and expenses charged to the sponsor's work as distinguished from such supplies and expenses that are applicable to two or more projects.

(5) Identifiable reproduction costs applicable to the work such as blueprinting, photostating, mimeographing, printing, etc.

(6) Advertising costs which are solely for the recruitment of personnel required for the performance by the consultant of obligations arising under the contract.

4-9. NONALLOWABLE COSTS. The expenses listed below are not allowable for reimbursement under an airport grant:

a. Costs of amusement and social activities and incidental costs relating thereto such as meals, lodging, rentals, transportation, and gratuities.

b. Contributions and donations.

c. Bad debts, including losses due to uncollectible customer's accounts and other claims, related collection costs, and related legal costs, arising from other businesses of the consultant.

d. Dividend provisions or payments and, in the case of sole proprietors and partners, distributions of profit.

e. Interest on borrowed capital.

f. Bonus payment for early completion of work.

4-10. FIXED PAYMENT. To all the estimated costs, including overhead, a percentage rate is applied to determine payment for profit, willingness to serve, and assumption of responsibility.

APPENDIX 1 – CONTRACTOR CONTRACTUAL REQUIREMENTS

TITLE VI ASSURANCES

During the performance of this contract, the contractor, for itself, its assignees and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. **Compliance with Regulations.** The contractor shall comply with the regulations relative to nondiscrimination in federally assisted programs of the Department of Transportation (hereinafter, "DOT") Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time, (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.
2. **Nondiscrimination.** The contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor shall not participate either directly or indirectly in the discrimination prohibited by section 21.5 of the Regulations, including employment practices when the contract covers a program set forth in Appendix B of the Regulations.
3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment.** In all solicitations, either by competitive bidding or negotiation, made by the contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the contractor of the contractor's obligations under this contract and the regulations relative to nondiscrimination on the grounds of race, color, or national origin.
4. **Information and Reports.** The contractor shall provide all information and reports required by the regulations or directives issued pursuant thereto and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the sponsor or the Federal Aviation Administration (FAA) to be pertinent to ascertain compliance with such regulations, orders, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information, the contractor shall so certify to the sponsor or the FAA, as appropriate, and shall set forth what efforts it has made to obtain the information.
5. **Sanctions for Noncompliance.** In the event of the contractor's noncompliance with the nondiscrimination provisions of this contract, the sponsor shall impose such contract sanctions as it or the FAA may determine to be appropriate, including but not limited to—
 - (a) withholding of payments to the contractor under the contract until the contractor complies, and/or
 - (b) cancellation, termination, or suspension of the contract, in whole or in part.
6. **Incorporation of Provisions.** The contractor shall include the provisions of paragraphs 1 through 5 in every subcontract, including procurements of materials and leases of equipment, unless exempt by the regulations or directives issued pursuant thereto. The contractor shall take such action with respect to any subcontract or procurement as the sponsor or the FAA may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the contractor may request the sponsor to enter into such litigation to protect the interests of the sponsor and, in addition, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

DISADVANTAGED BUSINESS ENTERPRISE (DBE) ASSURANCES

1. **Policy.** It is the policy of the Department of Transportation (DOT) that disadvantaged business enterprises, as defined in 49 CFR Part 23, shall have the maximum opportunity to participate in the performance of contracts financed in whole or in part with Federal funds under this agreement. Consequently, the DBE requirements of 49 CFR Part 23 apply to this agreement.
2. **DBE Obligation.** The contractor agrees to ensure that disadvantaged business enterprises, as defined in 49 CFR Part 23 have the maximum opportunity to participate in the performance of contracts and subcontracts financed in whole or in part with Federal funds provided under this agreement. In this regard, all contractors shall take all necessary and reasonable steps in accordance with 49 CFR Part 23 to ensure that disadvantaged business enterprises have the maximum opportunity to compete for and perform contracts. Contractors shall not discriminate on the basis of race, color, national origin, or sex in the award and performance of DOT-assisted contracts.

APPENDIX 2—PROPOSED SCOPE OF WORK

Design Services

ABC INTERNATIONAL AIRPORT

Taxiway A South and Holding Apron Reconstruction and New Hardstand

The contractor shall provide all required professional services to design the reconstruction of taxiway A south and holding apron and the proposed hardstand. This work will be performed and constructed under a Federal Aviation Administration (FAA) Airport Improvement Program (AIP) grant to the airport.

Taxiway A south will be constructed in Portland Cement concrete and will be widened to 100 feet and have new 40-foot-wide asphalt shoulders added. The South Holding Apron shall be reconstructed to essentially the same configuration as presently exists. Centerline taxiway lighting will be added to the taxiway and through the holding apron to Runway 36R/18L. Control panels in the FAA tower and field lighting electrical vault will also be modified for the new centerline lighting.

The new hardstand will be located north of the Airlift Airlines Maintenance Facility (currently under construction) south of the northeast Cargo Taxilane and west of the flying Bears hardstand. The hardstand will be a Portland Cement concrete apron with lighting similar to other hardstands, drainage to the Industrial Waste Sewerage System (IWS), and other utilities including fire protection.

Professional services to be provided by the contractor shall include at a minimum all civil, electrical and structural and geotechnical engineering services required to accomplish the following items:

PHASE 1 - PRELIMINARY DESIGN

The preliminary design phase is intended to identify and evaluate alternatives to assure cost effective and practical solutions for the work items identified. The designer will complete its evaluation of alternatives through contacts with local authorities and review of the preapplication, field investigations, and a practical design approach. The design will take advantage of local knowledge and experience and utilize expertise from recent construction projects to design a cost-effective project and ensure competitive construction bids. Cost efficiencies will be realized in a lower initial cost and in lower long-term maintenance cost. Activities include:

1. Coordinate with airport operations, FAA tower, and the airlines to minimize impacts in day-to-day operations of the airlines and air cargo lines. Also coordinate with facilities and maintenance and fire department. (This will require four coordination meetings throughout the design.
2. Prepare preliminary cost estimates and schematic design for each element of the project.
3. Provide all geotechnical investigation and analysis and pavement and other nondestructive testing and analysis required for the design.
4. Coordinate with the airport's project manager for required survey information.
5. Prepare an overall construction phasing plan in order to maximize project constructibility and minimize interference with airport operations. The contractor's phasing plan shall take into account other airport construction projects.
6. Determine aircraft usage through coordination with Airport staff and design and design the pavements to meet the anticipated aircraft traffic.

PHASE 2 - ENGINEERING PHASE ACTIVITIES

1. Evaluate local conditions:
 - A. Inventory local material suppliers, sources and capabilities.
 - B. Evaluate drainage alternatives.
 - C. Review electrical lighting layouts and determine system relocation capacities.

2. Review and evaluate project layout.
 - A. Verify master plan dimensions and data.
 - B. Review findings and recommendations with airport personnel.
3. Complete a soils investigation, soils report, and recommendations including:
 - A. Field Exploration

Conduct test pit explorations with a rubber-tired backhoe at various locations to a maximum depth of 8 feet in the runway, taxiway and apron areas. Log and field classify soils and obtain samples for laboratory testing.
 - B. Laboratory Testing

Perform laboratory index and strength tests as follows:

 - Compacted CBR test (3 compaction points/test)
 - Standard Proctor (4 point) compaction tests
 - Atterberg limit determinations
 - Sieve analysis
 - Unit weight and water content determinations
 - FAA soil classifications for all samples.
4. Complete necessary topography and site surveying, including establishment of project control points.
5. Complete pavement section alternatives analysis and provide recommendations including:
 - A. Conduct an initial cost analysis, life-cycle cost analysis, and analysis of locally available resources for each alternative.
 - B. Strategize bidding procedures and pavement section alternatives to assure competitive bidding.
6. Complete preliminary plan and profile design for the runway, taxiway and apron area.
7. Complete preliminary runway lighting, signing, and system circuitry layout.
8. Provide recommendations for construction phasing.
9. Complete construction cost estimates for the recommended alternatives.
10. Provide five sets of review documents
11. Complete the preliminary design report including:
 - A. Geotechnical investigation.
 - B. Topographical survey.
 - C. Preliminary plans.
 - D. Pavement section design and analysis.
 - E. Drainage design analysis.
 - F. Construction cost estimates.
 - G. Final summary and recommendations.
 - H. Phasing and scheduling recommendations.
12. Solicit comments on preliminary design for airport personnel and the FAA.

PHASE 3 - FINAL DESIGN

In the decision phase, the designer will provide well-defined construction requirements, with selected bid alternatives as appropriate to assure competitive construction bids. Construction schedules will be closely coordinated to assure the best possible weather conditions and the least possible interference with airport operations. Assist the airport with the advertisement, notification of local airport users, and generally complete the final construction contract documents for the project. The following outline describes in greater detail the tasks and products.

1. Incorporate preliminary design comments and respond as necessary to requests for additional information.
2. Provide final design drawings, specifications, and detailed construction cost estimates for the project.
3. Develop specifications using Advisory Circular 150/5370-10, Standards for Specifying Construction of Airports.
4. Design all improvements in accordance with FAA standards and guidelines and in accordance with the Airport Certification Manual and the Airport Operations Manual.
5. Coordinate the design of the project with existing and ultimate grades established at adjacent areas.
6. Provide for all required design of utilities and services.
7. Complete final quantity calculations.
8. Solicit Port and FAA review and approval.
9. Provide sets of contract documents.
10. Assist airport with advertising and interpretation of project requirements.
11. Assist airport with preparation of the FAA application.
12. Provide review of all submittal and shop drawings during construction.
13. Provide technical assistance and recommendations to the airport during construction.
14. Accomplish all work to meet the schedule which follows: Taxiway A South and the Holding Apron portion of the project will be phased to be constructed on an accelerated basis to be completed within two (2) months of the construction contractor's notice to proceed or earlier, if possible. During construction runway 36R/18L shall be kept in service at all times. The project limits will be defined such that the construction activities will not impact the operation of the runway as defined by Airport and FAA operational criteria.
15. The construction budget for the project is \$4,400,000, including construction change order contingency. The contractor shall evaluate the feasibility of this budget and keep the airport apprised during each phase of the design. The contractor shall advise the airport as to any options available for reducing construction costs to stay within the budget, if it appears that likely contractor bid prices will exceed this budget.

The design schedule is anticipate to be as follows:

Commission Authorization of Consultant Contract – 10/10/XX
 Contract Execution – 10/10/XX
 Start Design – 10/11/XX
 50 Percent Design Review – 11/22/XX
 Complete Design, Submit Estimates, Plans and Specs for Review – 1/12/XX
 Advertise for Bids – 3/21/XX
 Open Bids – 4/11/XX
 Prepare Award Memo – 4/12/XX
 Award Construction Contract – 4/25/XX
 Construction Contract Executed – 5/08/XX
 Construction Notice to Proceed – 5/14/XX
 Complete Taxiway A South & Holding Apron – 7/13/XX
 Complete Hardstand Construction – 11/01/XX

PHASE 4 – CONSTRUCTION SERVICES

During the construction phase of the project, the designer will assist the Airport to monitor and document progress for quality, cost, and liability control. Review contractor payment requests, complete necessary quality control testing, establish necessary survey control, continually inform the airport on project progress and problems, conduct the final project inspection, and complete the associated certification.

ACTIVITIES

1. Assist with prebid conference and bid opening. Issue addenda, prepare an abstract of bids, and make recommendations for award.
2. Assist in award notification to successful bidder and notify and return bid bonds to the unsuccessful bidders.

3. Solicit and review bonds, insurance certificates, construction schedules, etc.
4. Conduct preconstruction conference.
5. Complete construction staking, provide horizontal and vertical control.
6. Provide resident inspection to monitor and document construction progress, confirm conformance with schedules, plans and specifications, measure and document construction pay quantities, document significant conversations or situations, document input or visits by local authorities, etc.
7. Prepare change orders and supplemental agreement, if required.
8. Prepare and submit inspection reports.
9. Prepare and confirm monthly payment request.
10. Conduct necessary quality control testing.
11. Conduct document periodic wage rate interviews.
12. Conduct a final project inspection with airport personnel, the FAA, and the contractor.
13. Prepare as-constructed drawings and the final project report.

APPENDIX 3—CONTRACTOR CONTRACTUAL REQUIREMENTS

1. Direct Salary Costs

<i>Title</i>	<i>Hours</i>	<i>Rate/Hour</i>	<i>Cost(\$)</i>
Principal			
Project Manager			
Design Engineer			
Draftsman			
Technician			
Others as appropriate			
Total Direct Salary Costs			\$_____

2. Labor and General & Administrative Overhead *

Percentage of Direct Salary Costs _____ % \$_____

3. Direct Nonsalary Expenses

Transportation _____
 Per Diem _____
 Printing _____
 Testing _____
 Consultants _____
 Others _____

Total Direct Nonsalary Expenses \$_____

4. Subtotal of Items 1, 2, and 3 \$_____

5. Fixed Payment _____ % of Item 4 \$_____

6. Subcontract costs (specify) \$_____

Total Cost
 Items 4, 5, plus 6 \$_____

*For item 2, the consultant should submit a statement of auditable overhead expenses, certified by the consultant's auditor, the sponsor's auditor, the state's auditor, or a Federal government auditor.

FIGURE 1. Estimated Cost for Consultants' Services (Design Phase)

1. Direct Salary Costs

<i>Title</i>	<i>Hours</i>	<i>Rate/Hour</i>	<i>Cost(\$)</i>
Principal			
Resident Engineer			
Inspector			
Surveyors			
Technicians			
Others as appropriate			
Total Direct Salary Costs			\$_____

2. Labor and General & Administrative Overhead *

Percentage of Direct Salary Costs _____ % \$_____

3. Out-of-pocket expenses

a. Transportation

Commercial _____

Private Vehicle _____ miles @ \$_____ /mile \$_____

b. Per Diem

\$_____/day @ _____ days \$_____

c. Materials and Supplies

\$_____

d. Other

\$_____

Total Expenses \$_____

4. Subtotal of Items 1, 2, and 3 \$_____

5. Fixed Payment _____ % of Item 4 \$_____

6. Subcontract costs (include testing by independent lab) \$_____

7. Total Cost
Items 4, 5, plus 6 \$_____

*For item 2, the consultant should submit a statement of auditable overhead expenses, certified by the consultant's auditor, the sponsor's auditor, the state's auditor, or a Federal government auditor.

FIGURE 2. Estimated Cost for Consultant's Service (Construction Phase)

APPENDIX 4—DETAILED COST ANALYSIS

Date: _____

Job Title: _____

Estimated Construction Costs (ECC): \$ _____

<i>Item</i>	<i>Sponsor's Independent Estimate</i>	<i>Consultant Fee Proposal</i>	<i>Negotiation Diff</i>	<i>Objective</i>
ESTIMATED CONSTRUCTION DURATION				
Working Days	_____	_____	_____	_____
WAGES AND OVERHEAD				
Overhead Percent	_____	_____	_____	_____
Profit Percent	_____	_____	_____	_____
Principal \$/hr	_____	_____	_____	_____
Project Mgr \$/hr	_____	_____	_____	_____
Civil Engr \$/hr	_____	_____	_____	_____
Elec Engr \$/hr	_____	_____	_____	_____
Draftsman \$/hr	_____	_____	_____	_____
Typing \$/hr	_____	_____	_____	_____
Resident Engr \$/hr	_____	_____	_____	_____
Inspector \$/hr	_____	_____	_____	_____
Proj. Engr. (Const.)	_____	_____	_____	_____
Surveyor \$/hr	_____	_____	_____	_____
2 man crew	_____	_____	_____	_____
WORKHOURS				
Principal	_____	_____	_____	_____
Project Mgr.	_____	_____	_____	_____
Civil Engr	_____	_____	_____	_____
Elec Engr	_____	_____	_____	_____
Draftsman	_____	_____	_____	_____
Typing	_____	_____	_____	_____
Resident Engr	_____	_____	_____	_____
Inspector	_____	_____	_____	_____
Proj. Engr. (Const.)	_____	_____	_____	_____
Surveyors	_____	_____	_____	_____
WORKHOUR TOTALS	_____	_____	_____	_____
GEOTECH	\$ _____	_____	_____	_____
TRAVEL	\$ _____	_____	_____	_____
PRINTING	\$ _____	_____	_____	_____
TOTAL FEE	\$ _____	_____	_____	_____
As % of ECC	_____	_____	_____	_____

APPENDIX 5—SAMPLE RECORD OF NEGOTIATIONS

Date: _____

Job Title: _____

Location: _____

Anticipated A.I.P. Grant: _____

1. The consulting firm of XYZ was selected on January 21, 19____, from those consultants who submitted their qualifications.
2. A scope of work and detailed independent estimate in the amount of \$44,364 for the design phase and \$51,956 for the construction phase were prepared by the sponsor on February 21 and submitted to the ADO on February 23.
3. The scope of work and request for fee proposal were sent to XYZ consultants on February 23.
4. A meeting was held on February 27 with the sponsor, consultant, and FAA to ensure the consultant had a through understanding of the scope of work.
5. The consultant submitted his fee proposal for the work on March 2, broken down as follows:

Design Phase	\$58,224
Construction Phase	\$66,345
6. A detailed cost analysis comparing the detailed independent estimate with the consultants fee proposal was done on March 6 and negotiation objectives were established.
7. The sponsor's negotiator, Mr. A. called Mr. X of XYZ Consultants on March 7 to discuss the fee proposal. It was agreed that the construction duration of 60 days was adequate. The consultant was told that his overhead rate appeared high and asked to submit a detailed statement of overhead expenses for the previous year to verify his rate. Also the man hours for the principle and project manager seemed excessive. It was also noted that both a resident engineer and an inspector were not needed on the construction site full time. The surveying man hours during construction were also excessive. The consultant agreed to revise his fee proposal and resubmit it to the sponsor.
8. The consultant submitted a revised fee proposal for the work on March 9, broken down as follows:

Design Phase	\$51,286
Construction Phase	\$59,432
9. The detailed cost analysis was revised on March 12 to reflect the consultant's revised fee proposal.
10. The sponsor's negotiator met with Mr. X of XYZ Consultants at the sponsors office on March 13. Ineligible costs for entertainment and interest expense were deleted from the consultant's overhead and an acceptable overhead rate of 134 percent was agreed upon. A combined time of 60 man hours for the principal and project manager were agreed upon allowing 15 for the principle and 45 for the project manager. The consultants figures of 302 civil workhours, 120 electrical workhours, and 410 drafting workhours were accepted. The consultant agreed to have a full time inspector on the job with a resident

engineer also on the job one third of the time. The construction surveying workhours were reduced to 32 hours of a three-man crew. The consultant agreed to make the discussed changes and submit a final fee proposal.

11. The consultant submitted a final fee proposal for the work on March 14, broken down as follows:

Design Phase	\$47,324
Construction Phase	\$56,658

12. The final fee proposal is considered reasonable by the sponsor. A contract has been prepared for the agreement between the sponsor and consultant. The scope of work, draft contract, sponsor's independent estimate, consultant's fee proposals with revisions, and, detailed cost analysis are attached to this record of negotiation and hereby, submitted to the ADO for a reasonableness of cost determination.

13. The negotiations were conducted in good faith to ensure the fees are fair and reasonable. The procedures outlined in AC 150/5100-14 have been followed.

Sponsor's Signature